

Abstract

When multiple copies of a software program reside on a single machine and need to cooperate with each other to coordinate certain aspects of their execution, an election process is conducted to elect one of the copies as a master or supervisor copy, with the non-elected copies becoming slave or subordinate copies. In a preferred embodiment the election process depends on the presence of a TCP/IP protocol stack on the machine, and depends on its capability to enforce the restriction that only one copy of the program (an operating system process) can create a binding between a TCP socket and a given TCP port number. Each program creates the TCP socket, and requests the TCP/IP stack to bind the socket to the same configured port number, referred to herein as the "supervisor port number". Since only one of the programs can succeed in being assigned the supervisor port number, the first program to have its socket assigned to the supervisor port number becomes the supervisor (e.g., the master) program; the other programs respond to the failure of their request by assuming the role of a subordinate (e.g., a slave) program. Failure of the supervisor or subordinates is sensed by the TCP/IP stack and communicated to the appropriate program(s) via the TCP connection(s).